PATHFINDER LESSONS LEARNED
Executive Summary

Overview

In March 2002, SAF/AQ initiated the Pathfinder initiative to determine if collaborative requirements, seamless verification and rapid technology insertion could achieve the goals of reducing cycle time and increasing credibility. Six programs were involved in the full Pathfinder effort. They were Unmanned Combat Air Vehicle (UCAV), Small Diameter Bomb (SDB), Global Hawk, Distributed Common Ground Station (DCGS), Network Centric Collaborative Targeting (NCCT) and B-2 Radar Modernization Program (RMP). This summary provides an overview of the lessons learned in these three areas and highlights other accomplishments of interest. A complete overview of each program is available at *www.safaq.hq.af.mil/ACE.*

Technology Transition

The AFRL ACE formed a strong partnership with the Pathfinder program offices. They worked hard to increase the teaming relationship between the SPO and the appropriate AFRL Tech Directors. This effort resulted in identifying near term program requirements with available AFRL capabilities and resources.

AFRL formed a strong partnership with the UCAV program and its contractors, and the team built an integrated technology development and transition plan. AFRL realigned resources to meet near term and future needs of the UCAV, particularly in the air vehicle area and for automated aerial refueling to increase UCAV range.

AFRL collocated three individuals to the Small Diameter Bomb (SDB) program office. This proved beneficial in several ways. First, the lab had a technology effort called the Small Smart Bomb (SSB). Collocating lab personnel from that program into the SPO made it easier to see opportunities for transitioning technology to the SDB. Also, these same personnel were able to piggyback on another lab program that garnered important testing data on SDB components. AFRL received a reciprocal benefit: the close working relationship established with the SPO provided insight to penetration test data in support of their lab projects.

Specific Technology Transition take-away points are:

- AFRL ACE functioned as umbilical between program office and lab Technical Directors. The ACE set up the connections and processes and then monitored progress. AFRL changed an informal lab relationship that had some success to a well functioning relationship with focused support.

- SPOs can use the lab structure as an “honest broker” for contractor assessments of diminishing manufacturing source (DMS) issues.

- Having the technology personnel collocated in a program office proved invaluable in ensuring a smooth transition of technology into the development program.

Collaborative Requirements:

The use of High Performance Teams (HPT) to develop the draft requirements document and the involvement of the tester in the HPT process was a key lesson learned from the Pathfinder initiative. The timing was right to have the NCCT program act as a test case for writing a capability based requirements document. The program convened a High Performance Team (HPT) and successfully wrote an Interim Capabilities Document in one week. Global Hawk achieved a major success with the HPT process to complete the update of their original requirements document. The update moved through the HPT to a final document to the JROC in less than six months. The program enjoyed top cover and visibility from being a pathfinder program and was thus able to adhere to a very tight schedule. The ability to maintain this commitment by all parties during the follow-on maintenance period will be subject to future tracking.

The B-2 RMP and SDB programs hired a support contractor that was resident at ACC/DR to help develop and formulate requirements. These individuals had credibility within the ACC/DR organization and provided a conduit for the SPO into the requirements community

Specific take-away points:

- The HPT process shortens the time it takes to write a requirements document; however, you must have proper representation at the HPT. Although writing an IRD may only take one week, coordination can drag on for months if all stakeholders were not represented at the HPT. You must ensure all parties have a collaborative role up front – it may shorten the time to reach agreement in the formal coordination process.

- Early contractor involvement in the HPT should become the norm especially when a program is in sole source environment. Industry involvement significantly helps to understand the art of the possible and can prevent to some degree the temptation to overstate specific requirements and keep the process focused on capabilities. Early involvement also gives the contractor a head start on understanding customer expectations and what capabilities are important for the system.

- If you can afford it, hire a support contractor to be resident at MAJCOM DR/XP and provided a conduit for the SPO into the requirements community. This individual must have credibility within the MAJCOM DR/XP organization.

Seamless Verification:

Early involvement of the operational test community was a clear message learned from the Pathfinder initiative. Test involvement in the HPT process and increased communication with the SPO provided a proper review of the testability of the requirements being formulated. It also facilitates coordination of the TEMP.

The SDB Program Office provided AFOTEC a desk in the SDB SPO. The actual operators from the 53rd Test Wing are involved in the program to provide direct feedback/advice on the feasibility of requirements implementation.

The B-2 SPO leveraged a test process that already closely resembled the model for seamless verification since there is only a single test asset available. Some additional combined DT/OT opportunities were realized allowing the B-2 RMP to get closer to the seamless verification model.

Specific take-away points are:

- Provide AFOTEC desk space in the SPO – this greatly aids in getting the test community involved in the program up front.

Other Comments On Pathfinders:

The use of approval milestones or decision points like LRIP and Full Rate Production may no longer make sense in terms of alignment of a program's spirals. If a program is on a schedule of a new spiral every year, it will not fit into a customary milestone process because of either lead times or production quantities related to each individual spiral.

UCAV learned a valuable lesson from the Predator and Global Hawk programs and maintain many of the same personnel when it transitioned from Technology Development in the lab to System Development and Demonstration in the SPO. This provided excellent continuity.

Although DoD 5000 specifically allows programs to move into SDD directly from ACTD, the budget process isn't able to handle that transition very well. This makes it imperative to work closely with the programmers and budgeters when contemplating this sort of move.

The SDB program used its "Commander's Intent" – a clear statement which reflected the necessary outcomes of the program – to answer questions/approaches introduced by organizations not in the accountability chain and ensured the program remained focused.

SAF/ACE provided a short conduit to get issues in front of the SAE quickly – this reduced decision cycle time. For B-2 RMP, the pathfinder designation helped get an Overarching Integrated Product Team (OIPT) scheduled within one month of identification of the need for an OIPT.

Conclusion:

The Pathfinder initiative is completed. Key stakeholders have signed process papers that detail the concepts identified by the Pathfinders. The Acquisition Centers of Excellence and SAF/AQX, in team with AF/XOR and AF/TE, are working to update the appropriate AFIs to incorporate these and other lesson learned.